REMARKS

A needed change in the specification is made, so that the specification will not refer specifically to the claims.

Basic claim 10 has also been amended as to form, and so as to add the limitation of claim 11 thereto.

Reconsideration is accordingly respectfully requested for the rejection of the claims as anticipated by or unpatentable over WO 00/57985, alone or in view of ARCHER or WHEATLEY or SLOAN.

WO 00/57985 was of course recited in the specification as filed, and so the applicant was well aware of this reference when filing the present application.

WO 00/57985 has the great disadvantage that a device 31 must be provided thereon, which floats on the surface of the liquid and slides up and down rod 16, floating on the polymer frame 34. See the middle of page 5 of the specification of WO 00/57985.

The provision of the device 31 is undesirable for several reasons. In the first place, it obviously greatly adds to the cost of the device.

In the second place, the deeper the plunger is pushed, the farther away the source of silver ions is from the newly-filtered water. At the end of the operation, the water that last

passes through the filter may not come anywhere near the device 31.

In the third place, how would you assemble the device of WO 00/57985? No instructions are given and no feasible assembly method is evident.

By contrast, according to the present invention, the rod 7 is coated with a substance emitting silver ions. Not only is this far simpler than WO 00/57985, but it takes part in a very clever way to match the production of silver ions to the volume of liquid that must be purified. Notice that, as the plunger of the present invention is depressed, the volume of water that has passed through the filter increases at a certain proportional rate. But so does the surface of the coated rod 7, that is exposed to the filtered water, increase according to that same proportional rate. This means that, according to the present invention, the immersed area emitting silver ions remains in constant proportion to the volume of the liquid into which those ions are emitted. This is entirely new and unobvious from anything known to the prior art.

Notice also, in sharp contrast to WO 00/57985, that an area of silver-ions-emitting coating (that nearest the filter) is always exposed to the liquid that has just passed through the filter. Thus, liquid that has just passed through the filter will always be exposed to silver ions, even when the plunger touches the bottom of the container and stops.

We do not argue that the application of silver ions to a liquid for purification purposes is new: several thousand years ago, drinking water was kept in silver vessels to avoid contagion. Moreover, an almost endless variety of devices for applying silver ions to water for purification purposes is known in the art. We attach to this amendment pages from the Internet indicating the widespread use of silver ions in various embodiments, for this purpose.

The very multiplicity of the means for applying silver ions to water, emphasizes the unobviousness of our new way of doing so.

Thus, until the Examiner has a reference which duplicates or suggests the unique functions of the coated plunger rod of the present invention, as set forth above, then no viable rejection remains, and certainly not a rejection on WO 00/57985.

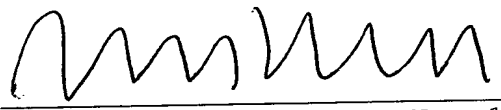
The secondary references applied may show the features for which they were used; but as none of these overcomes the fundamental drawbacks of WO 00/57985, pointed out above, it is not believed to be necessary to discuss the secondary references in detail at this time.

In view of the present amendment and the foregoing Remarks, therefore, it is believed that this application has been placed in condition for allowance, and reconsider and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



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(703) 979-4709

RJP/fb

APPENDIX:

- pages from the Internet indicating the widespread use of silver ions in various embodiments

Results for silver ions for water purification

Results 1 - 10 of about 14. (0.11 seconds)

Category
Sports & Outdoors
Outdoors & Camping
Water Filters & Purifiers
Home & Garden
Appliances
More »

Price range
Under $100
$100 - $225
$225 - $400
$400 - $900
Over $900
$ to $ Go

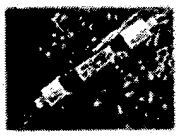
Or refine by...
Stores
Seller rating

Location: 22202 clear

Show grid view Sort by relevance

MicroPur **Purification** Tablets by Katadyn '03
... these Micropur **Purification** Tablets rely on soluble **silver ions** to ... If you need **water** quickly or rely on sources with gritty or muddy ...
Add to Shopping List

Bent Gate Mountainee...
All items from seller
$13.95



Hot Spring Spas FreshStart Pre-Filter **Water** Purifier 10
At the same time a small amount of **silver ions** are added to the **water** to begin the **purification** process. Made for all brands of pools and ...
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eBay
All items from seller
$59.95

image not available

Modern Tools and Methods of **Water** Treatment for ...
... electrochemically-generated **silver** and copper **ions** and colloidal gold for **water purification** and post-**purification** are presented. ...
Add to Shopping List

Springer
All items from seller
$159.00

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Mineral Ionizers for Above and In Ground Swimming Pools
... **silver**, and zinc are safe for drinking **water** as well as swimming pool **water** in quantities much greater than necessary for **purification**. ...
Add to Shopping List

Promolife.com
All items from seller
$479.95

Modern Tools and Methods of **Water** Treatment for ...
... electrochemically-generated **silver** and copper **ions** and colloidal gold for **water purification** and post-**purification** are presented. ...
Add to Shopping List

Alibris
All items from seller
$111.25

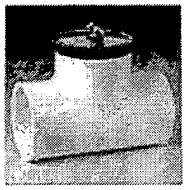
Modern Tools and Methods of **Water** Treatment for ...
... electrochemically-generated **silver** and copper **ions** and colloidal gold for **water purification** and

Springer
All items from seller
$79.95

image not available

post-**purification** are presented. ...
Add to Shopping List

NZ350 - Thomson Tec - IG Pool Ionizer — Pool Supply Pros — **$389.95**
Copper/**Silver ions** are the key: destroying the algae and bacteria, sanitizing the ... most effective **water purification** system on the market. ...
All items from seller
Add to Shopping List



SPA-150 - Thomson Tec - Spa Ionizer — Pool Supply Pros — **$239.95**
Copper/**Silver ions** are the key: destroying the algae and bacteria, sanitizing the ... most effective **water purification** system on the market. ...
All items from seller
Add to Shopping List

NZ450 - Thomson Tec - IG Pool Ionizer — Pool Supply Pros — **$519.95**
Copper/**Silver ions** are the key: destroying the algae and bacteria, sanitizing the ... most effective **water purification** system on the market. ...
All items from seller
Add to Shopping List

image not available

Modern Tools and Methods of **Water** Treatment for ... — Alibris — **$65.90**
... electrochemically-generated **silver** and copper **ions** and colloidal gold for **water purification** and post-**purification** are presented. ...
All items from seller
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Result Page: 1 2 **Next**

silver ions for water purification Search

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SILVER - *Nature's Water Purifier*

Articles within this research page:

Silver's Importance to Health

Feb 27, 1997
In a world concerned with the spreading of virus and disease, silver is increasingly being tapped for its bactericidal properties and used in treatments for conditions ranging from severe burns to Legionnaires Disease.

While silver's importance as a bactericide has been documented only since the late 1800s, its use in purification has been known throughout the ages. Early records indicate that the Phoenicians, for example, used silver vessels to keep water, wine and vinegar pure during their long voyages. In America, pioneers moving west put silver and copper coins in their water barrels to keep it clean.

In fact, "born with a silver spoon in his mouth" is not a reference to wealth, but to health. In the early 18th century, babies who were fed with silver spoons were healthier than those fed with spoons made from other metals, and silver pacifiers found wide use in America because of their beneficial health effects.

Helping to Stop Legionnaire's Disease
In response to major outbreaks of Legionnaire's Disease in the United Kingdom during the 1980s, the British government has undertaken studies on the use of .silver in water purification. The disease is named after Legionella pneumophilia, an aquatic organism which is widespread in small quantities within natural water sources. The bacteria presents few problems in naturally-flowing water, but man-made environments such as cooling towers and hot and cold water services provide conditions for it to multiply and spread. Infection is caused by inhaling airborne droplets of particles containing viable legionella, small enough to travel deep into the lungs and be deposited in the alveoli.

Recent research compared silver-copper ionization with the use of high temperatures to destroy bacteria. Contaminated cold water re infected the hot water system even when temperatures in hot water heaters reached as high as 60 degrees Centigrade. But experiments showed that even at lower water temperatures, ionization of soft water with silver and copper ions was effective against the bacteria.

"Ionization showed better results." said Nigel Pavey principal research engineer for BSRIA Water Services Technology Centre in Berkshire. And to make certain its benefits are widespread, "there should be more emphasis on copper-silver ionization in legislation,' he said.

Importance in Burn Therapy

Silver also has had a significant impact on the treatment of burns. Twenty years ago it was common for the wounds of severely burned patients to become infected, which delayed healing and sometimes led to death. Today silver sulfadiazine is used by hospitals worldwide to kill bacteria allowing the body time to restore the area naturally. Sulfadiazine is a know antibacterial agent. Combined with silver, studies show it is at least 50 times more active than other antibacterial agents. Silvadene now is the most widely used topical treatment for burn therapy. Other silver compounds also are being developed for use wherever silver sulfadiazine proves ineffective.

Keeping Plastic Clean

Widespread concerns that viruses can survive in body fluids deposited on plastic consumer products such as telephones prompted the Institute for Microbial Diseases in Osaka, Japan to develop a new silver complex that can be applied for lasting sanitary protection. The product is marketed under the name Amenitop, and has been shown to reduce the infection of certain viruses which have been linked to AIDS. The system consists of silica gel microspheres containing a silver thiosulfate complex. The silica gel coatings allows a gradual release of the. silver compound onto the surface, providing long lasting bactericidal action.

Promoting Skin Growth

Silver also has been successfully used to grow new skin on accident victims, including the restoration of fingertips with the original fingerprint. individuals whose wounds are so severe they lose tissue below the skin often never fully recover, left with only a thin layer of skin without the original nerve structure. This inferior skin layer results in abnormal sensations and intolerance to cold. Skin grafts cover the wounds but do not restore the functions of the area.

In a treatment developed by Mountain Medical Specialties of Lakemont. GA. a silver-coated fabric is used to cover the wound. A miniature battery is connected to the fabric to begin a flow of silver ions to encourage normal skin growth and eliminate bacteria which generally prevents complete regeneration of the skin and nerve function. This method has actually restored the natural skin patterns and sensations in the palms of hands.

Purifying Water

Silver-based water purification units for the home have been in use in Europe for more than 50 years. Royal Doulton ceramic candles combine silver within the ceramic during manufacturing to take advantage of the outstanding bacterial disinfecting properties of silver. These units meet the National Sanitation Foundation Standards covering bacteriostatic efficacy, the reduction of lead, copper and particulates and the reduction of taste and odor. They also have the approval of the US Environmental Protection Agency as a bactericidal unit.

Eliminating Harmful Bacteria

Tests by researchers at the University of Florida's Institute of Food and Agricultural Sciences show that silver and copper ions added to oyster tanks destroy harmful bacteria in the water without affecting the oysters. Once oysters are harvested from the ocean. they are cleaned in "depuration° tanks which are prone to bacteria infiltration. Silver ions added to the water destroy bacteria and copper ions kill fungus, making an inexpensive and environmentally friendly combination for keeping oyster tanks clean. "Silver and copper ionization is the perfect solution," ,says Richard Ganim, president of Superior Aqua Enterprises in Sarasota, Florida.

"The applications for ionization are almost endless," Ganim said. Currently ionization is used by chicken farmers to reduce bacteria and fungus without affecting the health of the chickens. 'We think this system will also work for citrus growers' who routinely spray their trees with chemicals.

Keeping Oxygen Handling Safe
In hospitals throughout the world, silver makes the handling of pure oxygen safer. Oxygen at high pressure in liquid form is very hazardous because some materials ignite or begin harmful chain reactions when they come in contact with it.

Limiting sparks during oxygen production is of critical importance. Because silver will not ignite, even at its melting point, the oxygen compressor design code issued by the Industrial Gas Council in Brussels, requires that wherever contact between metals occurs, one of the facing metals must be silver and the other a high-nickel alloy. This combination provides the lowest probability of sparking during high-speed compressor operation. The seals in compressor and pumping equipment are also silver to minimize any possibility of friction which could ignite a fire. Oxygen pump seals must be manufactured to extremely close tolerances, and the silver also allows fine machining,

Protecting Eyes
One out of every seven pairs d prescription glasses sold in the United States incorporates silver to protect patients eyes from sunlight. Silver halide crystals, melted into glass for sunglasses, change clear glass from 85 percent visible Iight transmission to 22 percent transmission in less than 60 seconds, a change that is endlessly reversible.

Helping People With Allergies
For individuals who are allergic to detergents, reusable laundry disks are providing a solution to their problem. the disks are made of "activated" ceramic material with metallic elements - silver and copper - inside. When the disks are placed in the washing machine along with the clothes and water, the silver and copper releases electrons which in turn produce ionized oxygen he]ping to break up dirt and organic compounds. The disks are sold under the name "Clean Power Plus"‘ and are used three at a time for about 300 loads.

For more information on any of these medical uses of
silver, please contact Christy Rosche at The Silver Institute (202) 835-0185

Silver - Preventing Outbreaks of Legionnaire's Disease

Silver Copper System Works Better than High Temperatures to Destroy Deadly Bacteria
Report by: The Silver Institute - Silver News - Feb/Mar 97

Following major outbreaks of Legionellosis (Legionnaire's Disease) in the United Kingdom in the late 1980's the government came out with safety guidelines for cooling towers which all but eliminated the problem. Now, however the government has turned its attention to hot and cold service which now accounts for a significant number of identified cases of Legionnaire's disease in the UK

Silver is playing a key role in efforts to prevent these deadly outbreaks. With funding from the government and private industry the building and services research and information association (BSRIA) has completed a two year research project to compare the effectiveness of using silver and copper ionization against the storage of water at high temperatures to destroy the bacteria.

"Ionization showed better results" says Nigel Pavey, Principal Research Engineer for BSRIA. For example, contaminated cold water re-infected the hot water system even when temperatures in hot water heaters reached as high as 60 degrees Centigrade. Experiments showed that even at lover water temperatures, ionization of soft water with silver and copper ions was effective against legionella. In

showers and hot and cold faucets, ionization was effective against the bacteria if silver concentration was around 40 micrograms per liter.

Hard water presented a problem however. The electrodes used for ionization frequently scaled up and the high level of dissolved solids in the water took the silver ions out of the solution. When silver ionization levels could be kept up using scaling controls, the technique was effective.

BSRIA's findings were published in Ionization Water Treatment for Hot and Cold Water Services available from BSRIA. For more information fax BSRIA at 44-1344-487575

Silver - Reliable Alternatives to Chlorine

Silver Water Purification Systems Offer Reliable Alternative to Chlorine
Report by: The Silver Institute - Silver News -

Laguna Niguel, CA (March 25, 1997) - Silver based water purification systems offer the most reliable and cost effective alternative to chlorine, a chemical that is increasingly coming under fire for the carcinogenic by products it leaves in water, according to David Eaton, secretary of The Institute of Water Ionization Technologies in the United Kingdom and technical director of Roseland Hydronics PLC.

Speaking at the annual meeting of The Gold & Silver Institutes in Laguna, Niguel, CA. this week Eaton said progressively restrictive legislation is confronting the use of chemicals, especially chlorine, which for nearly a century. has been the primary medium for water disinfection.

With increasing pollution, utilities are forced to put far more chlorine into the supply chain, Eaton explained. The chemical reaction that oxidizes impurities when chlorine is added, also forms carcinogenic byproducts. "Of course these same byproducts have been generated by chlorination for a long time but never in the quantities that are now being seen," he said.

Silver offers a healthy alternative. The metal has long been known for its biocidal properties, Eaton noted. The Ancient Phoenicians. who stored wine in silver urns to preserve it, provide one of the earliest recorded examples of the metal's use for water purification.

Applying modern technology to this old fashioned principle, The Institute of Water Ionization Technologies has developed silver ion generators for municipal water supplies. The market for silver ionized swimming pool systems has expanded significantly in the US and overseas, Eaton said. But in Britain, silver ionization is being developed for mainstream water systems. Machines used to clean primary water must be much larger and more powerful than small swimming pool units, and require accurate control mechanisms to ensure that levels of silver are maintained and kept within drinking water standards.

Eaton discussed a recent project funded by the UK Department of the Environment to study the control of Legionnaires disease by using silver ions. The disease is named after Legionella pneumophilia, an organism that is widespread in small quantities within natural water sources. The bacteria becomes lethal at a water temperature of 95 degrees F and can be killed at temperatures between 135 and 140 degrees F.

Of three tests, silver/copper ions in soft water produced the best results. The copper ion disrupted the enzyme structures of the cell allowing the silver ion to penetrate inside where it rapidly killed the cell's

life support system. US regulations allow a silver level of 100 ppb in drinking water, but a silver level of only 20 ppb kills Legionella.

A new European Union Drinking Water Standard in draft form has removed any upper limit for silver in drinking water following the World Health Organization's Guidelines for Drinking Water Quality which States, "It is unnecessary to recommend any health-based guideline for silver as it is not hazardous to human heath.

Eaton said silver ion generators currently are being used in intensive care and heart transplant units of hospitals, and for poultry processing, engineering, brewing, cooling towers and swimming pools.

The sale of silver based ionizers is beginning to take off in the UK and there are promising growth markets in the Scandinavia, Germany, and the Far East. We calculate that requirements for silver globally will increase to about two million ounces annually within five years.

For the complete text of Eaton's speech, contact The Silver Institute, (202) 835-0185. For more information contact the Institute of Water Ionization Technologies, 01621869255 (fax) 01621868211.

Research Quotes:

Thanks to eye-opening research, silver is emerging as a wonder of modern medicine. An antibiotic kills perhaps a half dozen different disease organisms but silver kills some 650. Moreover, silver is virtually non-toxic. Dr. Harry Margraf of St. Louis, a pioneering silver researcher, says: "Silver is the best all around germ fighter we have."[1]

The value of silver in medicine, and as a purifier has been acknowledged for centuries. Egyptians implanted silver plates into skulls with surgery. In Ancient Greece and Rome, people used silver containers to keep liquids fresh. When settlers moved across the American West, they would purify a container of water by putting a silver dollar in it overnight. Towards the end of the 19th century, other medicinal uses for silver were developed including the use of silver and mercury in filling cavities, and the dropping of a silver filtrate solution into the eyes of newborn babies to prevent blindness due to infection.[2]

Scores of independent tests have shown that silver promptly kills bacteria in water and maintains water purity over long periods of time.[3]

Russian scientists working on water recycling and purification problems for the Soviet space program have decided on silver as the best long term sanitation agent. Researching the problems of water shortage over periods of several months, as well as purification for immediate use, they determined that ionized silver provides the safest and longest lasting method of transforming polluted waste into potable water.[4]

After testing 23 methods of purifying water, NASA has also chosen silver as the purifying agent on the Space Shuttle program.[5][6]

Silver was used to provide shuttle crews with pure water for drinking, air conditioning, food preparation and other operations. By establishing 100 parts of silver per billion parts of water NASA will totally eliminate the need for chlorine! The most dramatic purification tests occurred in 1976 in a 20,000 gallon swimming pool in Nebraska. There was no disinfectant of any kind in the water. Fifty gallons of

municipal sewage waste water was put into the pool. That produced a dangerous concentration of 7,000 E coli cells per 100 millilitre [half a cup] of water. Contents of the pool were then pumped through a tank containing alternating anodic and cathodic silver electrodes for disinfection. Within three hours the pool was entirely free of E. coli and the water contained only 3.2 parts of silver per billion parts of water.[7]

The Allegheny County Health Department in Pennsylvania conducted tests in a 152,000 gallon pool which previously had been disinfected by a 50 pounds per day chlorinator. The system was replaced by a silver system for the swimming pool season of 1974 and 1975. The County Health Department took up to 50 daily samples and found that silver ions remained in the pool at the low steady rate of 20 parts per billion. The water remained free of bacteria throughout the two seasons. In contrast, 65 water samples from 30 other pools having a concentration of 700 parts per billion of available chlorine showed a mean of 1.3 pseudomonas and 7.3 staph cells per millilitre of water.[8]

The impact of silver technology continues to grow. More than half of the American soft drink bottling companies, numerous shipping lines and a host of other enterprises in 70 countries, use silver to sterilize water. These and many other examples of the expanding use of silver in water purification have been documented by Dr. Fred Zobist and presented to the Silver Institute in Washington, D.C.

Footnotes:

1. Jim Powell, "Our Mightiest Germ Fighter"; Science Digest, March 1978
2. Dr. Harry Margraf, "The Story of Silver in Medicine"; Gold & Silver Newsletter, September 1974
3. "Tests Show Silver Best Water Purifier"; The Silver Institute Letter, December 1976
4. "Silver Clears Up Polluted Water"; The Silver Institute Letter, July/August, 1973
5. Jim Powell, "Our Mightiest Germ Fighter"; Science Digest, March 1978
6. "Winged-Ferry to Shuttle Between Earth and Space"; The Silver Institute Letter March 1976
7. "Silver Guards Good Health:'; The Silver Institute Letter, May 1975
8. "Silver Carbon Filter Purifies Swimming Pool"; The Silver Institute Letter, May 1973

Links to Silver Institute News Letters within this site:

1. Vol 3, Number 5, May 73 - Silver Carbon Filter Purifies Swimming Pool
2. Vol 3, Number 5, May 73 - Silver Cleans Up Polluted Water
3. Vol 5, Number 5, May 75 - Silver Guards Good Health
4. Vol 5, Number 5, May 75 - German Purifies Swimming Pool with Silver
5. Vol 6, Number 3, Mar 76 - Winged Ferry to Shuttle between Earth and Space
6. Vol 6, Number 11, Dec 76 - Test Show Silver Best Water Purifier

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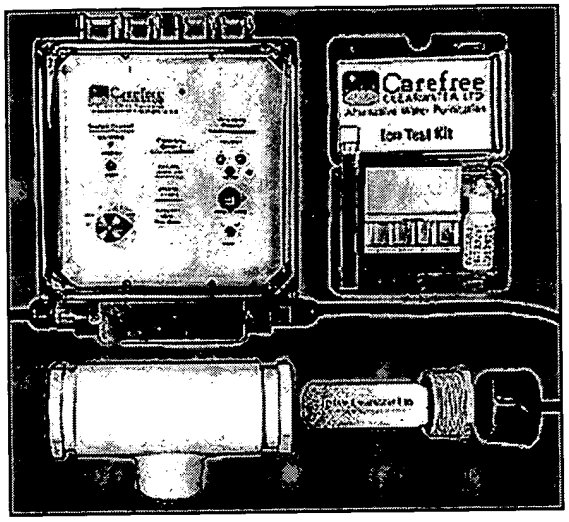
Carefree CLEARWATER LTD.

Electronic Water Purification I Benefits I Models and Pricing
Cooling Towers, Fountains and Commercial Pools I Contact Us
Parts I Links I Home

Popular Mechanics

"Another form of water treatment is by ionization.
This unit introduces a low concentration of ions into pool water that neutralizes any disease-causing microorganisms."

Popular Mechanics · April 1995



Better Homes and Gardens GARDEN Product & Planning Guide

This electronic purifier releases copper and silver ions to destroy bacteria and algae without pool chemicals. Carefree Clearwater, Ltd.,

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TECH BRIEFS
ENGINEERING SOLUTIONS FOR DESIGN & MANUFACTURING

See What NASA Says After 20+ Years of Success in the Field

WATER TREATMENT SYSTEMS MAKE A BIG SPLASH

ORIGINATING TECHNOLOGY/ NASA CONTRIBUTION

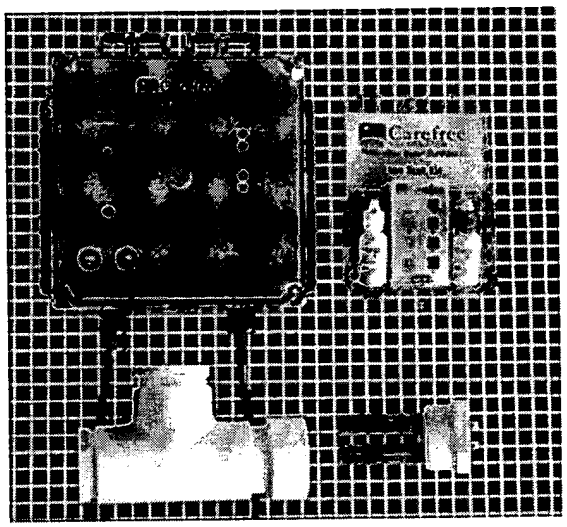
In the 1960s, NASA's Manned Space Center (now known as Johnson Space Center) and the Research Division, conducted a research program to develop a small, lightweight water purif that would require minimal power and would not need to be monitored around-the-clock by a ounce purifier, slightly larger than a cigarette pack and completely chlorine-free, dispensed s water supply to successfully kill off bacteria. A NASA Technical Brief released around the ti that the silver ions did not "impart an unpleasant taste to the water."

NASA's ingenuity to control microbial contamination in space caught on quickly, opening th controlling water pollutants on Earth.

PARTNERSHIP

Carefree Clearwater, Ltd., of Cornelia, Georgia, obtained NASA's permission to manufactur Space Agency's patented Electrolytic Silver Ion Cell for numerous commercial and industria swimming pools, hot water spas, decorative fountains, ponds, manufacturing processes, and towers.

PRODUCT OUTCOME



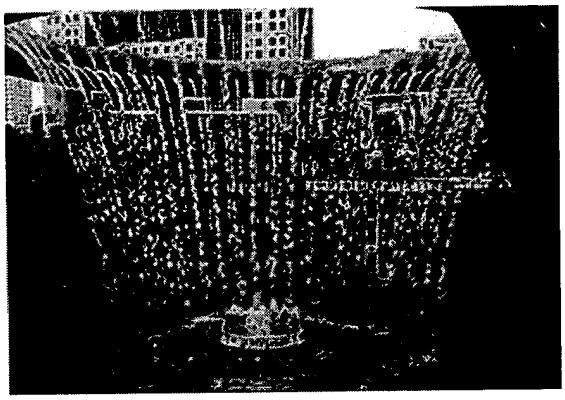
Using NASA technology, Carefree Clearwater, Ltd.'s automatic purification syst release copper and silver ions into the water to destroy bacteria an

The Carefree Clearwater systems based on NASA's Apollo-era technology electronically rel into the water to destroy bacteria and algae—which are then filtered out. Unlike chlorine, the heat and sunlight, therefore they are capable of providing a very stable sanitizer residual. The substantially reduces the demand for chlorine so that fewer chloramines are formed and fewe This cuts down on undesirable side effects realized in swimming pool environments, such as bleached or dry skin and hair. Furthermore, the ions pose no health risks, as scientists conten chemically with organic materials in water to form a class of carcinogenic substances called

Numerous independent laboratory tests from NASA, health departments, and universities, an

have confirmed the exceptional sanitizing ability of copper/silver ionization. Studies further s of copper and silver can be effective against E. coli, Pseudomonas, Legionella Pneumophila Staphylococcus, Streptococcus, Salmonella, and other pathogens—some of which have prov levels of chlorine.

Carefree Clearwater's automatic water purification ionizers employ a safe, low direct current household batteries, that passes through a set of copper and silver alloy electrodes. As the wa ionizers' sealed chamber, metallic ions are generated to purify the water. When these ions en they destroy them through an alteration in their enzyme processes. All of the charged particle be pulled out by a filter. The ions uphold a stable sanitizer residual until they are completely



The Fountain of Wealth in Suntec City, Singapore — the largest decorative fountain in the Clearwater purifier system

The company markets several water purification products, including the Model 1200 State-o Electrolytic Ionizer and the Model 1100 Automatic Purification System. The Model 1200, w gallon swimming pools, features a rugged and durable design to protect its solid-state electro and harsh environments; simple operating controls; light-emitting diode displays for power, self-cleaning anode design; and an ion test kit. Variations of the Model 1200 are available fo that range from 45,000 to 125,000 gallons. The Model 1100 offers many of the same feature lower price, since it is designed to purify spas and swimming pools up to 25,000 gallons.

Carefree Clearwater asserts that its commercial purifier quickly pays for itself by eliminating on chemical sanitizers, algaecides, and clarifiers. Operating costs for the ion generator's elec less than 25 cents per month. Periodically oxidizing the water to break down organic contam oils, and leaf debris and maintaining a low halogen level and a normal pH balance are all tha Clearwater purifier is installed. Savings are also realized with a Carefree Clearwater purifier other damage to hair, swimsuits, pool equipment, and nearby plants and flowers. In addition, testing and chemical handling are not required with a Carefree Clearwater product.

The company's purification systems have been installed in thousands of residential and resor facilities throughout the country, and at many major university indoor/outdoor pools, includi the University of Texas, Purdue University, and Wake Forest University. Decorative fountai Centers for Disease Control and Prevention in Atlanta, the John F. Kennedy Center for the P DC, and Kellogg's Cereal City in Battle Creek, Michigan, are kept sanitized with Carefree C